

WHAT IS CLAIMED IS:

1. An image forming apparatus including a plurality of electron-emitting devices arranged in a matrix of rows and columns, and fluorescent substances for
5 emitting light by electrons emitted by the electron-emitting devices, comprising:

frame rate conversion means for converting a frame rate of an input image signal,

wherein a signal output from said frame rate
10 conversion means is a signal having a maximum time interval during which the fluorescent substances are continuously irradiated with electrons from the electron-emitting devices in units of rows in
line-sequential scanning, so as not to substantially
15 degrade linearity of a luminance characteristic of the fluorescent substances that changes depending on an electron irradiation time for the fluorescent substances.

2. An image forming apparatus including a plurality
20 of electron-emitting devices arranged in a matrix of rows and columns, and fluorescent substances for emitting light by electrons emitted by the electron-emitting devices, comprising:

a frame rate conversion circuit for converting a
25 frame rate of an input image signal,

wherein a signal output from said frame rate

conversion circuit is a signal having a maximum time interval during which the fluorescent substances are continuously irradiated with electrons from the electron-emitting devices in units of rows in
5 line-sequential scanning, so as not to substantially degrade linearity of a luminance characteristic of the fluorescent substances that changes depending on an electron irradiation time for the fluorescent substances.

10 3. The image forming apparatus according to claim 1, wherein the frame rate is converted simultaneously when a signal for an interlaced scanning is converted into a signal for a non-interlaced scanning.

15 4. The image forming apparatus according to claim 1, further comprising means for performing pulse width modulation by the signal whose frame rate is converted.

5. The image forming apparatus according to claim 2,
20 further comprising a circuit for performing pulse width modulation by the signal whose frame rate is converted.

6. The image forming apparatus according to claim 1, wherein the frame rate is converted to shorten the
25 maximum time interval during which the fluorescent substances are continuously irradiated with electrons

from the electron-emitting devices in units of rows in line-sequential scanning, compared to a case in which the frame rate is not converted.

- 5 7. An image forming apparatus having a plurality of electron-emitting devices arranged in a matrix of rows and columns, and fluorescent substances for emitting light by electrons emitted by the electron-emitting devices, comprising:

10 signal processing means,

 wherein said signal processing means converts an input signal into a signal having a maximum time interval during which the fluorescent substances are continuously irradiated with electrons from the
15 electron-emitting devices in units of rows in line-sequential scanning, so as not to substantially degrade linearity of a luminance characteristic of the fluorescent substances that changes depending on an electron irradiation time for the fluorescent substances.

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8. An image forming apparatus having a plurality of electron-emitting devices arranged in a matrix of rows and columns, and fluorescent substances for emitting light by electrons emitted by the electron-emitting
25 devices, comprising:

 a signal processing circuit,

wherein said signal processing circuit converts an input signal into a signal having a maximum time interval during which the fluorescent substances are continuously irradiated with electrons from the electron-emitting devices in units of rows in line-sequential scanning, so as not to substantially degrade linearity of a luminance characteristic of the fluorescent substances that changes depending on an electron irradiation time for the fluorescent substances.

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9. The image forming apparatus according to claim 7, wherein the signal processing is performed simultaneously when a signal for an interlaced scanning is converted into a signal for a non-interlaced scanning signal.

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10. The image forming apparatus according to claim 7, further comprising means for performing pulse width modulation by the processed signal.

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11. The image forming apparatus according to claim 8, further comprising a circuit for performing a pulse width modulation by the processed signal.

25 12. The image forming apparatus according to claim 1, wherein the electron-emitting devices are surface-

conduction type electron-emitting devices.

13. The image forming apparatus according to claim 7,
wherein the electron-emitting devices are surface-
5 conduction type electron-emitting devices.

14. The image forming apparatus according to claim 1,
further comprising an electrode to which a potential for
accelerating electrons emitted by the electron-emitting
10 devices applies, wherein the potential is higher by not
less than 500 V than a potential applied to the
electron-emitting devices in order to emit electrons.

15. The image forming apparatus according to claim 7,
15 further comprising an electrode to which a potential for
accelerating electrons emitted by the electron-emitting
devices applies, wherein the potential is higher by not
less than 500 V than a potential applied to the
electron-emitting devices in order to emit electrons.

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16. The image forming apparatus according to claim 1,
further comprising an electrode to which a potential for
accelerating electrons emitted by the electron-emitting
devices applies, wherein the potential is higher by not
25 less than 3 kV than a potential applied to the
electron-emitting devices in order to emit electrons.

17. The image forming apparatus according to claim 7,
further comprising an electrode to which a potential for
accelerating electrons emitted by the electron-emitting
5 devices applies, wherein the potential is higher by not
less than 3 kV than a potential applied to the
electron-emitting devices in order to emit electrons.

18. The image forming apparatus according to claim 1,
10 further comprising an electrode to which a potential for
accelerating electrons emitted by the electron-emitting
devices applies, wherein the potential is higher by not
less than 5 kV than a potential applied to the
electron-emitting devices in order to emit electrons.

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19. The image forming apparatus according to claim 7,
further comprising an electrode to which a potential for
accelerating electrons emitted by the electron-emitting
devices applies, wherein the potential is higher by not
20 less than 5 kV than a potential applied to the
electron-emitting devices in order to emit electrons.